AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A process to fabricate nanopores and micropores, comprising the steps of:

providing an integral substrate member having a thickness and first and second opposing surfaces;

forming at least one first V-shaped channel lengthwise in a first direction in said first surface; and

forming at least one second V-shaped channel lengthwise in a second direction in said second surface, said second direction being disposed at an angle relative to said first direction,

wherein said first channel and said second channel extend inwardly from said first and second surfaces and intersect at a point, said point defining a pore extending through said substrate member from said first surface to said second surface,

wherein said pore extending through said substrate member from said first surface to said second surface is constructed to have dimensions suitable for transversely passing one or more biomolecules.

2. (Original) The process of claim 1, said step of forming at least one second V-shaped channel in said second surface further comprising:

forming a plurality of parallel V-shaped channels in said second surface, wherein said first V-shaped channel and said plurality of second V-shaped channels intersect at an array of points defining an array of pores extending through said substrate member from said first surface to said second surface.

3. (Original) The process of claim 1, said step of forming at least one first V-shaped channel in said first surface further comprising:

forming a plurality of parallel V-shaped channels in said first surface wherein said second V-shaped channel and said plurality of first V-shaped channels intersect at an array of points defining an array of pores extending through said substrate member from said first surface to said second surface.

4. (Original) The process of claim 3, said step of forming at least one second V-shaped

channel in said second surface further comprising:

forming a plurality of parallel V-shaped channels in said second surface, wherein said plurality of first v-shaped channels and said plurality of second V-shaped channels intersect at an array of points defining an array of pores extending through said substrate member from said first surface to said second surface.

5. (Original) The process of claim 1, wherein said substrate member is selected from the group consisting of: silicon, hard plastics and PTFE.

6. (Original) The process of claim 1, wherein said substrate member has a surface layer selected from the group consisting of: silicon oxide, silicon nitride, polyimide, PMMA and PTFE.

7. (Original) The process of claim 1, wherein the method used in said steps of forming said first and second channels is selected from the group consisting of: etching, milling, cutting, molding and extrusion.

8. (Original) The process of claim 1, wherein said pore has a width that is between about 1 nm and 100 μm.

9. (Original) The process of claim 1, wherein said pore is electrically addressable.

10. (Original) The process of claim 2, wherein said array of pores are individually electrically addressable.

11. (Original) The process of claim 3, wherein said array of pores are individually electrically addressable.

12. (Currently Amended) The process of claim 1, further comprising the steps of:
oxidizing said substrate member;
heating said substrate member adjacent said aperture thereby reducing the size of said pore;
monitoring the change [[is]]in the size of said aperture using an electronic feedback loop; and
stopping said heating when the size of the pore is reduced to a predetermined size.

13. (Currently Amended) A process to fabricate nanopores and micropores, comprising the steps of:

providing an integral substrate member having a thickness and first and second opposing surfaces;

forming at least one first V-shaped channel lengthwise in a first direction in said first surface; and

forming at least one second V-shaped channel lengthwise in a second direction in said second surface, said second direction being disposed at an angle relative to said first direction, wherein said first channel and said second channel extend inwardly from said first and second surfaces and intersect at a point, said point defining a pore extending through said substrate member from said first surface to said second surface;

~~The process of claim 1, further comprising the steps of:~~

placing a first crystal into said first channel adjacent said pore;

placing a second crystal into said second channel adjacent said pore;

applying a force to urge said first and second crystals towards one another to maintain their position relative to one another;

placing an uncured liquid polymer material into said first and second channels adjacent said first and second crystals;

curing said polymer material to provide a plurality of polymer molecules, the polymer molecules each having a diameter; and

removing said crystals from said pore, said pore now having a size defined by the point of intersection between said first and second crystals and the diameter of one of said plurality of polymer molecules.

14. (Original) The process of claim 13, wherein said crystals are sodium chloride.

15. (Original) The process of claim 14, wherein said sodium chloride crystals are coated with a thin layer of electrically conductive material.

16. (Original) The process of claim 14, wherein said step of removing said crystals is dissolving said crystals.

17. (Withdrawn-Currently Amended) A method for characterizing a biomolecule

comprising the steps of:

providing an integral insulating substrate member having a thickness and first and second opposing surfaces, said insulating member including:

at least one first V-shaped channel lengthwise in a first direction in said first surface, and

at least one second V-shaped channel lengthwise in a second direction in said second surface, said second direction being disposed at an angle relative to said first direction,

wherein said first V-shaped channel and said second channel extend inwardly from said first and second surfaces and intersect at a point, said point defining an electrically addressable pore extending through said substrate member from said first surface to said second surface;

locating the insulating member between ionic reservoirs at least one of which includes the biomolecule to be characterized; and

passing biomolecules through said pore.

18. (Withdrawn) The method of claim 17, further comprising the step of:

detecting an ionic current and changes in ionic current as the biomolecule is passed through the addressable pore; and

characterizing the biomolecule based on the detected ionic current and changes thereto.

19. (Withdrawn) The method of claim 17, wherein said step of characterizing said biomolecule includes determining the length, variation in length, width and variation in width of said biomolecule.

20. (Withdrawn-Currently Amended) A method for characterizing a biomolecule comprising the steps of:

providing an electrically-addressable nanopore array including:

an integral insulating substrate member having a thickness and first and second opposing surfaces,

a plurality of first channels lengthwise in a first direction in said first surface, and

at least one second channel lengthwise in a second direction in said second surface, said second direction being disposed at an angle relative to said first direction,

wherein said first channels and said at least one second channel extend inwardly from said first and second surfaces and intersect at an array of points, said array of points defining an

array of pores extending through said substrate member from said first surface to said second surface;

locating the electrically-addressable aperture array between ionic reservoirs at least one of which includes a biomolecule to be characterized; and

passing the biomolecule through one of the pores.

21. (Withdrawn) The method of claim 20, further comprising the step of:

detecting an ionic current and changes in ionic current as the biomolecule is passed through the nanopores; and

characterizing the biomolecule based on the detected ionic current and changes thereto.

22. (Currently Amended) The process of claim 12, wherein said aperture is a micropore when the width of the said aperture is larger than ~~approximately~~ 100nm.

23. (Currently Amended) The process of claim 12, wherein said aperture is a nanopore when the width of the said aperture is less than or equal to ~~approximately~~ 100nm.